Appl. No. 09/775,715
Reply dated 7/23/2003
Reply to Office Action mailed May 8, 2003

REMARKS

The present application and its claims are directed to a document ranking system based on user behavior and a document searching system based on user behavior.

PRIOR ART REJECTIONS

In response to the Examiner's rejection of Claims 1- 26 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0099700 to Li (hereinafter "Li") in view of U.S. Patent No. 6,480,837 to Dutta (hereinafter "Dutta"), Applicant respectfully traverses the rejection. In particular, the claims of the application are not rendered obvious by the prior art cited by the Examiner for the reasons set forth below. Therefore, Claims 1- 26 are allowable over the prior art cited by the Examiner.

Claim 1 - 12

Independent Claims 1, 4, 7 and 10 recite a system and method for user behavior based ranking of a document. Neither of these claims in rendered obvious by the combination of Li and Dutta. In particular, Claims 1 and 4 are patentable over Li and Dutta because they recite determining a feature vector and then "modifying the feature vector for the document based on a sample of user actions captured during a search session so that the document is more highly ranked in response to the user actions." The prior art cited does not disclose or suggest this combination of elements. For example, the Examiner asserts that Li discloses determining a feature vector as recited in the claim. In Li, however, the feature vector (K_i, w_i) is a feature vector of the query terms wherein the query terms that are used for a particular category are set to "1" and those that are not used for a particular category are set to "0". (See Li Paragraph 00068.) Thus, the feature vector for each document is based on the category keywords generated by the system in Li and not based on the terms that appear in the document as claimed.

The Examiner admits that Li does not disclose modifying the feature vector and relies on Dutta to show that element of the claim. However, Dutta does not disclose or suggest modifying the feature vector based on a sample of user action captured during a search session as claimed. The portion of Dutta cited by the Examiner (Col. 1, line 66 – Col. 2, line 56) is a portion of the background of the invention (Col. 1, line 66 – Col. 2, line 11) and a portion of the summary of the invention (Col. 2, lines 16 – 56.) The quote from Dutta used by the Examiner to support his

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rejection actually describes 1) a search engine product made by Direct Hit (in the background of the invention) and 2) Dutta's system (in the summary of the invention) so that two different systems/products are being described. Therefore, the two portions of Dutta cited by the Examiner do not follow from each other and do not support each other. In addition, neither the Direct Hit product (as it is described in Dutta) nor Dutta disclose or suggest modifying the feature vector based on a sample of user action captured during a search session as claimed. In particular, as far as the Direct Hit product is understood from the description in Dutta, Direct Hit does perform some popularity rankings, but does not sample the user actions during a search session to modify a feature vector. Direct Hit also does not appear to use a feature vector as it could use various different techniques to rank a document. Therefore, the Direct Hit description does not support the Examiner's rejection of the claims.

Furthermore, the system shown in Dutta does not disclose or suggest the claimed invention. The Dutta system does use a popularity weight which is adjusted based on a search. See Col. 2, lines 20 – 42. However, in accordance with Dutta's disclosure, the popularity weights could be initialized at some neutral number to allow for decrementing to indicate a low priority for a particular URL/keyword pair. See Col. 4, lines 65 – 67. The popularity weights indicate the frequency of selection of the associated URL when returned in response to a search including the keyword associated with the URL and popularity weight. See Col. 4, lines 2- 5. The popularity weights are then adjusted upwards based on the keyword index. Examples of the popularity weights for some keyword/URL combinations are shown in Figure 2. Thus, the system in Dutta adjusts the popularity weights (based on a search) but does not modify the feature vector as claimed. In accordance with the invention, a feature vector for a particular document and the weight for each term in the document is adjusted as is shown in an example set forth in the specification at page 11, line 1 – page 12, line 2. Therefore, Dutta does not disclose or suggest the claimed invention.

In addition, neither Li nor Dutta discloses that the feature vector is modified based on a sample of user actions captured during a search session. Therefore, Claims 1, 4, 7 and 10 are allowable over the combination of Dutta and Li. Furthermore, Claims 2-3, 5-6, 8-9 and 11-12 which depend from Claims 1, 4, 7 and 10 are also allowable for at least the same reasons as above.

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<u>Claims 13 – 26</u>

Independent Claims 13 and 20 are allowable over Li and Dutta as the combination of Li and Dutta do not disclose or suggest the claimed invention. These claims are allowable for at least the same reasons as Claims 1, 4, 7 and 10 set forth above. Furthermore, these independent claims recite "sampling user search behavior" and "updating the feature vector of the document based on the sampled user search behavior so that the rank of the document is changed based on the user sampled user search behavior." Neither Li nor Dutta discloses or suggests these features set forth in these claims. Li does not disclose this feature as admitted by the Examiner and Dutta also does not disclose the particulars for sampling user search behavior and then updating the feature vector based on the sampled user search behavior. Although Dutta discloses a popularity weight, it does not disclose that the popularity weight is generated by sampling user search behavior. Therefore, Claims 13 and 20 are allowable over Li and Dutta.

Claims 14 – 19 and 21-26 (which depend from these independent claims) are allowable for at least the same reasons as set forth above. Furthermore, Claims 14 and 21 (which depend from Claims 13 and 20) are allowable because they recite that "the sample of the user behavior further comprises a query feature vector of the terms in a particular query and the feature vector of the one or more documents returned based on the query and viewed by the user." This feature is not shown or suggested by Li or Dutta.

Claims 15 and 22 further recite "wherein the sample generating further comprises generating a sample during a sampling frequency" which is not shown or suggested by the prior art. Claims 16 and 23 further recite "combining the feature vector of the document with a feature vector of the query, the feature vector comprising frequency values for one or more terms that appear in the query" which is not shown or suggested by the prior art. Claims 17 and 24 further recite "scaling the query feature vector based on the viewing time of the document by the user during the sampled user behavior to generate a scaled query feature vector" which is not shown or suggested by the prior art. Claims 18 and 25 further recite "wherein the scaling further comprises generating a negative scaling factor in response to a short viewing time so that the scaled query feature vector is negative and the feature vector of the document is reduced and the rank of the document is reduced" which is not shown or suggested by the prior art cited by the Examiner. Finally, Claims 19 and 26 further recite "wherein the scaling further comprises

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generating a positive scaling factor in response to a long viewing time so that the scaled query feature vector is positive and the feature vector of the document is increased and the rank of the document is increased" which is also not shown or suggested by the prior art cited by the Examiner. For all of these claims, the Examiner has relied on the same portion of the Dutta patent and that portion of Dutta nowhere discloses the features set forth in these dependent claims. Therefore, the claims which depend from Claims 13 and 20 are allowable for these additional reasons.

CONCLUSION

In view of the above, it is respectfully submitted that Claims 1- 26 are allowable over the prior art cited by the Examiner and early allowance of these claims and the application is respectfully requested.

The Examiner is invited to call Applicant's attorney at the number below in order to speed the prosecution of this application.

The Commissioner is authorized to charge any deficiencies in fees and credit any overpayment of fees to Deposit Account No. 07-1896.

Respectfully submitted,

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